3M Brookings Ethylene Oxide Abatement
PETRIFILM (Anguil Catalytic Oxidizer)
Startup, Shutdown and Malfunction (SSM) Plan
[40CFR§63.6(e)(3)]

1.0 INTRODUCTION

3M Brookings (3M) will follow the procedures for maintaining operation of the Ethylene Oxide sterilizer lines and associated control equipment during startup, shutdown, and malfunction periods as described in this SSM Plan. At all times, including periods of startup, shutdown, and malfunction, 3M will operate and maintain each sterilizer line, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions.

The SSM Plan does not provide all operating, recordkeeping, and reporting requirements. See Title V Operating Permit and references for comprehensive requirements.

2.0 GENERAL REQUIREMENTS/APPLICABILITY

Petrifilm Ethylene Oxide sterilizers:

During a period of startup, shutdown, or malfunction of this equipment, 3M will reduce emissions to the greatest extent, which is consistent with safety and good air pollution control practices. The *general duty to minimize emissions* during a period of startup, shutdown, or malfunction does not require 3M to achieve emission levels that would be required by the MACT O standard at other times if this is not consistent with safety and good air pollution control practices, nor does it require 3M to make any further efforts to reduce emissions if levels required by the applicable standard have been achieved.

Malfunction:

A malfunction is defined in 40CFR§63.2, as follows:

> "*Malfunction* means any sudden, infrequent, and not reasonably preventable failure of air pollution control and monitoring equipment, process equipment, or a process to operate in a normal or usual manner which causes, or has the potential to cause, the emission limitations in an applicable standard to be exceeded. Failures that are caused in part by poor maintenance or careless operation are not malfunctions."

Malfunctions must be corrected as soon as practicable after their occurrence. To the extent that an unexpected event arises during a startup, shutdown, or malfunction, an owner or operator must comply by minimizing emissions during such a startup, shutdown, and malfunction event consistent with safety and good air pollution control practices per 40CFR§63.6(e)(1)(i).

SSM Plan Reference Documents:

As required by 40CFR§63.6(e)(3), this SSM Plan and referenced documents (list provided herein) describe, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; and a program of corrective action for malfunctioning process, air pollution control, and monitoring equipment used to comply with the relevant standard.

Plant documents that are considered part of this SSM Plan by reference include:

A. Anguil Thermal Oxidizer Standard Operating Procedures, July, 2013 – See copy in boiler control room.
B. PLC System & Anguil Catalytic Fault Matrix
C. Shop Work Order System/Maintenance Management System
D. Management of Change System (MOC)
E. Petrifilm training manual process instructions
F. Operating & Maintenance Plan – copy in boiler control room

3.0 PURPOSE OF SSM PLAN 40CFR§63.6(e)(3)

(A) Ensure that, at all times, the owner or operator operates and maintains each affected source, including associated air pollution control and monitoring equipment, in a manner which satisfies the *general duty to minimize emissions* (see description above);

(B) Ensure that owners or operators are prepared to correct malfunctions as soon as practicable after their occurrence in order to minimize excess emissions of hazardous air pollutants; and

(C) Reduce the reporting burden associated with periods of startup, shutdown, and malfunction (including corrective action taken to restore malfunctioning process and air pollution control equipment to its normal or usual manner of operation).

4.0 RECORDKEEPING 40CFR§63.6(e)(3)(iii)&(v)

4.1 SSM Plan

A current copy this SSM Plan will be kept at the facility and will be made available upon request for inspection and copying by the Administrator. In addition, if this SSM Plan is subsequently revised, 3M is required to maintain each previous (i.e., superseded) version of this plan at the facility and to have each such previous version available for inspection and copying by the Administrator for a period of five years after the revision of this plan. If at any time after adoption of this SSM Plan, 3M ceases operation or is otherwise no longer subject to the MACT standard, 3M is required to retain the most recent copy of this plan for five years from the date the facility ceases operation or is no longer subject to the MACT standard and to have this plan available upon request for inspection and copying by the Administrator.

SSM Plan copies are maintained by the EHS Department.

4.2 SSM Event Records

When actions taken by the owner or operator during a startup or shutdown (and the startup or shutdown causes the source to exceed any applicable emission limitation in the relevant emission standards), or malfunction (including actions taken to correct a malfunction) *are consistent with the procedures specified in the affected source's SSM Plan, the owner or operator must keep records for that event which demonstrate that the procedures specified in the plan were followed.* These records may take the form of a "checklist," or other effective form of recordkeeping that confirms conformance with the SSM Plan and describes the actions taken for that event. In addition, the owner or operator must keep records of these events as specified in paragraph 40CFR§63.10(b), including records of the occurrence and duration of each startup or shutdown (if the startup or shutdown causes the source to exceed any applicable emission limitation in the relevant emission standards), or malfunction of operation and each malfunction of the air pollution control and monitoring equipment. Furthermore, the owner or operator shall confirm that actions taken during the relevant reporting period during periods of startup, shutdown, and malfunction were consistent with the affected source's startup, shutdown and malfunction plan in the semiannual (or more frequent) startup, shutdown, and malfunction report required in 40CFR§63.10(d)(5).

The EHS department maintains the SSM Log. The plant engineering department, and IT department all support this effort to assure information in the log is accurate and complete. Log is located on the main control panel in the department.

4.3 CMS Records 40CFR§63.10(b & c)

Required Continuous Monitoring System (CMS) records and the location of these records include:

CMS RECORD – Regulatory Requirement	***LOCATION***
All required (CMS) measurements (including monitoring data recorded during unavoidable CMS breakdowns and out-of-control periods) 40CFR§63.3350(c)(1), (4) & (9) & 40CFR§63.3350(f) & 40CFR§63.10(c) • *Temperature set point:* Temperature target temperature established in last destruction efficiency test was completed. • *Daily*: Record a daily average oxidation temperature. • *Oxidizer*. If you are using an oxidizer to comply with the emission standards, you must comply with 63.365(c) of this section. Install, calibrate, maintain, and operate temperature monitoring equipment according to the manufacturer's specifications. The calibration of the chart recorder, data logger, or temperature indicator must be verified 2 time per year to be accurate to within +-5.6C (+-10 F).	• Temperature set point and program fault programs under systems controls. • Network data collection in Historian database • Daily temperature report: *Brookingsreports* under utilities reports on the network. • CMMS has all electronic records for all preventive and non-scheduled work completed on specific work centers.

CMS RECORD – Regulatory Requirement	*LOCATION*
The nature and cause of any malfunction (if known); • The corrective action taken or preventive measures adopted • The nature of the repairs or adjustments to the CMS that was inoperative or out of control • The corrective action taken or preventive measures adopted • The nature of the repairs or adjustments to the CMS that was inoperative or out of control	SSM log located on the main control panel of oxidizer.

5.0 REPORTING 40CFR§63.6(e)(3)(iv)

If an action taken by the owner or operator during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) *is not consistent with the procedures specified in the affected source's SSM Plan, **and** the source exceeds any applicable emission limitation in the relevant emission standard, then the owner or operator must record the actions taken for that event and must report such actions within 2 working days after commencing actions inconsistent with the plan*, followed by a letter within 7 working days after the end of the event (unless the owner or operator makes alternative reporting arrangements, in advance, with the Administrator).

Agency reporting is the responsibility of the EHS Department.Document History:

6.0 General Catalytic Oxidizer Shutdown Procedures:

If/when the Oxidizer "ready signal" is lost to sterilizers the program will default to bypass to atmosphere and let the sterilizer finish current cycle. No sterilizer will be able to start again until the oxidizer "Ready fault" has been addressed and the system has met all run criteria.

Malfunction or Breakdown Procedures: 3M has numerous procedures and safeguards in place to minimize emissions and to respond to non-routine events such as malfunctions and breakdowns. See reference documents.

Preventative Maintenance Program: 3M plant engineering personnel are responsible for inspection and routine maintenance of the sterilizers and the catalytic oxidizer following a predetermined schedule.

- Preventative Maintenance (PM) operations on a weekly, monthly, quarterly, semi-annual, and annual frequency have been established.
- Spare parts inventory has been established. This inventory is maintained by the stock room.
- Plant Mechanical Integrity (MI) program is in place for critical safety devices as identified by Process Hazard Analysis (PHA) and is included in the Process Safety Information (PSI).
- Recordkeeping: A maintenance management system (MMS) is used by plant engineering to verify proper preventive/predictive maintenance is performed on the oxidizer and sterilizers.

This computer system manages the routine maintenance, inspections and repairs. Daily-unscheduled repairs are recorded in the MMS as well.

- Any changes other than replacement-in-kind require a Management of Change (MOC) review process, involving specific multidisciplinary professional resources. Plant MOC database is used to manage changes.

7.0 Document Review

Reviewed annually – SSM is not required under MACT O, but is a good engineering practice.

Reviewed: 08/06/2018 by Paul Peterson
05/14/2019 Updated document title to include "Peterifilm (Anguil catalytic Oxidizer)". PLP

Next review: